

EXHIBIT 1

Soap Technology For The 1990's

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American Oil Chemists' Society
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$$30\% \text{ NaOH}_{\text{ADDED}} = \frac{2.16}{208} \times \frac{40}{30} \times 100 = 1.38 \text{ lb}$$

To summarize in molar equivalents, the formulas containing free fatty acids will have the following weight ratios:

Coconut Fatty Acid_{WT} < Stearic Acid_{WT}.

To illustrate, 5% coconut fatty acid, MW 208 (as FFA) = 6.6% stearic acid, MW 274 (as FFA). In other terms, it will take a greater quantity of stearic acid than coconut fatty acid to neutralize a given quantity of alkali.

Bar Soap Properties

The physico-chemical properties of soap, such as physical constants, X-ray structure, and solubility data, are described in depth in well known monographs (8).

In the present section, the following product formula related attributes shall be discussed:

- Bar Lathering
- Bar Soap Lather Panel Test
- Bar Cracking
- Bar Mushing & Wear Rate
- Bar Rinsability
- Bar Efflorescence
- Bathtub Deposits
- Bar Graininess & Bar Smoothness
- Soap Alkaline Reaction
- Fatty Acid Migration
- Cleansing

The evaluation of the above properties is usually conducted by a combination of laboratory tests and consumer panels. An excellent book on the statistical treatment of consumer data has recently been published (9).

Bar Lathering

The lathering is one of the most important attributes of a bar of soap perceived by the consumer. The lathering, in conjunction with the fragrance, are probably the two most important attributes of a bar of soap in signaling its quality and performance to the consumer. The lathering